

REMARKS

Claim 26 is amended, Claims 13-17 are cancelled and Claims 32-35 are added. Claims 1-12 and 22-35 remain in the application. No new matter is added by the amendments to the claims.

The Rejections:

In the Final Office Action dated September 2, 2005, the Examiner rejected Claims 13-17 under 35 U.S.C. 103(a) with Claim 13 being unpatentable over Ehinger et al. (US 5,772,125) in view of Cote et al (US 6,250,502) and Hoffman et al (US 6,306,868) and Claims 14-17 being unpatentable over that combination plus other references. Applicant cancelled Claims 13-17.

The Examiner rejected Claim 26 under 35 U.S.C. 103(a) as being unpatentable over Conlin (U.S. 6,346,150) in view of JP 10-15873. The Examiner stated that Conlin discloses a painting apparatus comprising: an arm (18) for a painting robot, the arm having a housing and an outer end (see Figs 1 and 2); and a wrist (30,32) having one end attached to the outer end of the arm (34), the wrist being formed of a non-conductive material (insulative material, see column 3, lines 17-18) and having an opposite end for mounting a paint applicator (spray nozzle 20). The Examiner admitted that Conlin lacks teaching a robot arm housing formed of a non-conductive material, but stated that the Japanese reference discloses an insulating robot arm housing (see English translated Abstract) and it would have been obvious to one of ordinary skill in the art at the time of the invention to use non-conductive material for the housing to achieve an excellent insulating characteristic and improve safety of the apparatus.

The Examiner stated that Claims 1-12 and 22-25 are allowed.

The Examiner stated that Claims 27-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicants' Response:

Applicants amended Claim 26 to clarify that the structural components of the wrist are formed of a non-conductive material. Support for the amendment to Claim 26 is found on Page 10, at lines 7-19.

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Conlin shows a conventional robot 12 with a robot arm 18 having a paint spray nozzle 20 mounted at the outer end of a nozzle extension 34 attached to the arm by a wrist joint. Fig. 2 shows a pair of cover members 30, 32 mounted over the wrist joint and made of a shape retaining material. The cover members 30, 32 are made of a semi-rigid material, such as PVC, to permit the members to be spread apart for mounting on the wrist joint. The cover members 30, 32 are removably held on the wrist joint by snap members 38, 40 and 42.

The Conlin covers clearly are not structural components of the wrist joint since they seal around the joint and permit the arm 18 and the nozzle extension 34 to rotate (Col. 2, Lines 50-54). The Conlin covers are not even attached to the wrist joint, but are interlocked with the snap members 38, 40 and 42. Thus, Conlin does not disclose a robot arm having a housing made of a non-conductive material or a robot wrist having structural components made of a non-conductive material.

The Japanese reference shows a robot with a first insulating arm 5, a second insulating arm 4, and insulating covers 6A and 6B between the arms. However, there is no explanation as to whether "insulating" means "non-conducting" as defined by Applicants' claims. The arms and the covers show in the drawing are lined for metal material. Also, the covers 6A and 6B are similar to the Conlin cover members and are not structural components of the robot wrist.

Thus, Conlin and the Japanese reference do not show or suggest Applicants' invention as defined by amended Claim 26.

Applicants added Claims 32-35 which are similar in subject matter to allowed Claims 22-25 respectively. Claim 32 differs from Claim 22 by reciting that: a) the paint canister is mounted on the arm instead of inside the housing; and b) that the color changer is adapted to be mounted on the painting robot rather than outside the housing.

As shown in Fig. 8, the canister 47 is mounted on the opposite side of the outer arm 35 wall from the color changer 42. While the canister 47 can be considered to be inside the housing 35a (Fig. 7), the canister is exposed for removal through a window 58 formed in the housing. Depending upon the size and shape of the window 58, the canister 47 could be considered "outside" the housing and, therefore, Applicants believe that "on the arm" covers any mounting position of the canister.

As shown in Fig. 7, the color changer 42 is mounted on the external surface of the housing 35a. However, the color changer can be mounted anywhere on the robot and still be "outside the housing".

The Examiner made the following statement of reasons for the indication of allowable subject matter as to claims 1-12 and 22-25: "prior art of record does not disclose or suggest a painting apparatus comprising the combination an outer arm having a housing wherein a paint canister mounted inside the housing and a color changer mounted on an external surface of the housing and a paint transfer line continuously connecting the color changer to the an interior of the paint canister." Applicants note that Claim 22 does not define the color changer as being "mounted on an external surface of the housing". Applicants believe that the combination of a paint canister mounted on the arm, a color changer adapted to be mounted on the painting robot and a paint transfer line continuously connecting the color changer to the an interior of the paint canister and providing electrostatic isolation of the paint canister from the color changer during use of the paint canister for painting is patentable.

The Examiner stated that the prior art made of record and not relied upon is considered pertinent to Applicant's disclosure. The Examiner identified Plummer (U.S. 4,884,752) as disclosing (see Fig 1) paint reservoirs (22, 23) providing electrostatic isolation from the color changer (15). Applicants reviewed this reference and found it to be no more pertinent than the prior art relied upon by the Examiner in his rejections.

In view of the amendments to the claims and the above arguments, Applicants believe that the claims of record now define patentable subject matter over the art of record. Accordingly, an early Notice of Allowance is respectfully requested.